

SEQUENCE LISTING



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<120> N-Acetylglucosaminyltransferase III expression in lower eukaryotes

<130> GFI-108 CIP

<140> US 10/680,963
<141> 2003-10-07

<150> US 10/371,877
<151> 2003-02-20

<150> US 09/892,591
<151> 2001-06-27

<150> US 60/214,358
<151> 2000-06-28

<150> US 60/215,638
<151> 2000-06-30

<150> US 60/279,997
<151> 2001-03-30

<150> PCT/US02/41510
<151> 2002-12-24

<150> US 60/344,169
<151> 2001-12-27

<160> 101

<170> PatentIn version 3.2

<210> 1
<211> 3
<212> PRT
<213> artificial

<220>
<223> Glycosylation target

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> wherein "Xaa" is any amino acid except proline

<400> 1

Asn Xaa Ser

1

<210> 2

<211> 3

<212> PRT

<213> artificial

<220>

<223> Glycosylation target

<220>

<221> MISC_FEATURE

<222> (2)..(2)

<223> wherein "Xaa" is any amino acid except proline

<400> 2

Asn Xaa Thr

1

<210> 3

<211> 21

<212> DNA

<213> artificial

<220>

<223> Primer A for target gene in P. pastoris (1,6-mannosyltransferase)

<400> 3

atggcggaagg cagatggcag t

21

<210> 4

<211> 21

<212> DNA

<213> artificial

<220>

<223> Primer B for target gene in P. pastoris (1,6-mannosyltransferase)

<400> 4

ttagtccttc caacttcctt c

21

<210> 5

<211> 26

<212> DNA

<213> artificial

<220>

<223> Primer A for target gene in P. pastoris (1,2
mannosyltransferases)

<220>

<221> misc_feature

<222> (9)..(9)
<223> wherein "n" is equal to "a" or "t" or "g" or "c".

<220>
<221> misc_feature
<222> (12)..(12)
<223> wherein "n" is equal to "a" or "t" or "g" or "c".

<220>
<221> misc_feature
<222> (18)..(18)
<223> wherein "n" is equal to "a" or "t" or "g" or "c".

<400> 5
taytgmgng tngarcynga yathaa

26

<210> 6
<211> 20
<212> DNA
<213> artificial

<220>
<223> Primer B for target gene in P. pastoris (1,2
mannosyltransferases)

<220>
<221> misc_feature
<222> (6)..(6)
<223> wherein "n" is equal to "a" or "t" or "g" or "c".

<220>
<221> misc_feature
<222> (12)..(12)
<223> wherein "n" is equal to "a" or "t" or "g" or "c".

<400> 6
gcrtcncccc anckytcrta

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<210> 7
<211> 0
<212> DNA
<213> Kluyveromyces lactis

<400> 7
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<210> 8
<211> 0
<212> PRT
<213> Kluyveromyces lactis

<400> 8
000

<210> 9
<211> 458
<212> PRT

<213> Saccharomyces cerevisiae

<220>

<221> MISC_FEATURE

<222> (304)..(318)

<223> Low-complexity sequence

<220>

<221> MISC_FEATURE

<222> (416)..(436)

<223> Low-complexity sequence

<400> 9

Met Glu Gly Glu Gln Ser Pro Gln Gly Glu Lys Ser Leu Gln Arg Lys
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Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly
20 25 30

Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
35 40 45

Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
50 55 60

Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu
65 70 75 80

Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly
85 90 95

Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met
100 105 110

Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val
115 120 125

Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys
130 135 140

Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu
145 150 155 160

Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys
165 170 175

Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala

[illegible]

420	425	430
Xaa Xaa Xaa Xaa Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg		
435	440	445
Thr Thr Ser Ser Met Glu Lys Lys Leu Asn		
450	455	
<210> 10		
<211> 458		
<212> PRT		
<213> <i>Saccharomyces cerevisiae</i>		
<400> 10		
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Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly		
20	25	30
Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro		
35	40	45
Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys		
50	55	60
Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu		
65	70	75 80
Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly		
85	90	95
Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met		
100	105	110
Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val		
115	120	125
Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys		
130	135	140
Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu		
145	150	155 160
Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys		
165	170	175

Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala
 180 185 190

Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val
 195 200 205

Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu
 210 215 220

Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala
 225 230 235 240

Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln
 245 250 255

Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu
 260 265 270

His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile
 275 280 285

Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His
 290 295 300

Leu Ala Leu Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val
 305 310 315 320

Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His
 325 330 335

Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile
 340 345 350

Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg
 355 360 365

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
 370 375 380

Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
 385 390 395 400

Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala
 405 410 415

Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu Leu Leu Leu Leu Ala
420 425 430

Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
435 440 445

Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
450 455

<210> 11
<211> 389
<212> PRT
<213> *Saccharomyces cerevisiae*

<220>
<221> MISC_FEATURE
<222> (279)..(293)
<223> Low-complexity sequence

<400> 11

Trp Gln Asp Leu Lys Asp Gly Val Arg Tyr Val Ile Phe Asp Cys Arg
1 5 10 15

Ala Asn Leu Ile Val Met Pro Leu Leu Ile Leu Phe Glu Ser Met Leu
20 25 30

Cys Lys Ile Ile Ile Lys Lys Val Ala Tyr Thr Glu Ile Asp Tyr Lys
35 40 45

Ala Tyr Met Glu Gln Ile Glu Met Ile Gln Leu Asp Gly Met Leu Asp
50 55 60

Tyr Ser Gln Val Ser Gly Gly Thr Gly Pro Leu Val Tyr Pro Ala Gly
65 70 75 80

His Val Leu Ile Tyr Lys Met Met Tyr Trp Leu Thr Glu Gly Met Asp
85 90 95

His Val Glu Arg Gly Gln Val Phe Phe Arg Tyr Leu Tyr Leu Leu Thr
100 105 110

Leu Ala Leu Gln Met Ala Cys Tyr Tyr Leu Leu His Leu Pro Pro Trp
115 120 125

Cys Val Val Leu Ala Cys Leu Ser Lys Arg Leu His Ser Ile Tyr Val

130		135		140
Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr	Leu Phe Met Val Val Thr			
145	150	155	160	
Val Leu Gly Ala Ile Val Ala Ser Arg Cys His Gln Arg Pro Lys Leu				
	165	170	175	
Lys Lys Ser Leu Ala Leu Val Ile Ser Ala Thr Tyr Ser Met Ala Val				
	180	185	190	
Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe Pro Ala Met Met Ile Ser				
	195	200	205	
Leu Phe Ile Leu Asn Asp Ala Asn Val Ile Leu Thr Leu Leu Asp Leu				
	210	215	220	
Val Ala Met Ile Ala Trp Gln Val Ala Val Ala Val Pro Phe Leu Arg				
	225	230	235	240
Ser Phe Pro Gln Gln Tyr Leu His Cys Ala Phe Asn Phe Gly Arg Lys				
	245	250	255	
Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln Met Met Asp Glu Glu Ala				
	260	265	270	
Phe Asn Asp Lys Arg Phe Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa				
	275	280	285	
Xaa Xaa Xaa Xaa Xaa Phe Val Thr Arg Tyr Pro Arg Ile Leu Pro Asp				
	290	295	300	
Leu Trp Ser Ser Leu Cys His Pro Leu Arg Lys Asn Ala Val Leu Asn				
	305	310	315	320
Ala Asn Pro Ala Lys Thr Ile Pro Phe Val Leu Ile Ala Ser Asn Phe				
	325	330	335	
Ile Gly Val Leu Phe Ser Arg Ser Leu His Tyr Gln Phe Leu Ser Trp				
	340	345	350	
Tyr His Trp Thr Leu Pro Ile Leu Ile Phe Trp Ser Gly Met Pro Phe				
	355	360	365	
Phe Val Gly Pro Ile Trp Tyr Val Leu His Glu Trp Cys Trp Asn Ser				

370

375

380

Tyr Pro Pro Asn Ser
385

<210> 12

<211> 375

<212> PRT

<213> Homo sapiens

<400> 12

Trp Gln Glu Arg Arg Leu Leu Leu Arg Glu Pro Arg Tyr Thr Leu Leu
1 5 10 15

Val Ala Ala Cys Leu Cys Leu Ala Glu Val Gly Ile Thr Phe Trp Val
20 25 30

Ile His Arg Val Ala Tyr Thr Glu Ile Asp Trp Lys Ala Tyr Met Ala
35 40 45

Glu Val Glu Gly Val Ile Asn Gly Thr Tyr Asp Tyr Thr Gln Leu Gln
50 55 60

Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly Phe Val Tyr Ile Phe
65 70 75 80

Met Gly Leu Tyr Tyr Ala Thr Ser Arg Gly Thr Asp Ile Arg Met Ala
85 90 95

Gln Asn Ile Phe Ala Val Leu Tyr Leu Ala Thr Leu Leu Leu Val Phe
100 105 110

Leu Ile Tyr His Gln Thr Cys Lys Val Pro Pro Phe Val Phe Phe Phe
115 120 125

Met Cys Cys Ala Ser Tyr Arg Val His Ser Ile Phe Val Leu Arg Leu
130 135 140

Phe Asn Asp Pro Val Ala Met Val Leu Leu Phe Leu Ser Ile Asn Leu
145 150 155 160

Leu Leu Ala Gln Arg Trp Gly Trp Gly Cys Cys Phe Phe Ser Leu Ala
165 170 175

Val Ser Val Lys Met Asn Val Leu Leu Phe Ala Pro Gly Leu Leu Phe
180 185 190

Leu Leu Leu Thr Gln Phe Gly Phe Arg Gly Ala Leu Pro Lys Leu Gly
 195 200 205

Ile Cys Ala Gly Leu Gln Val Val Leu Gly Leu Pro Phe Leu Leu Glu
 210 215 220

Asn Pro Ser Gly Tyr Leu Ser Arg Ser Phe Asp Leu Gly Arg Gln Phe
 225 230 235 240

Leu Phe His Trp Thr Val Asn Trp Arg Phe Leu Pro Glu Ala Leu Phe
 245 250 255

Leu His Arg Ala Phe His Leu Ala Leu Leu Thr Ala His Leu Thr Leu
 260 265 270

Leu Leu Leu Phe Ala Leu Cys Arg Trp His Arg Thr Gly Glu Ser Ile
 275 280 285

Leu Ser Leu Leu Arg Asp Pro Ser Lys Arg Lys Val Pro Pro Gln Pro
 290 295 300

Leu Thr Pro Asn Gln Ile Val Ser Thr Leu Phe Thr Ser Asn Phe Ile
 305 310 315 320

Gly Ile Cys Phe Ser Arg Ser Leu His Tyr Gln Phe Tyr Val Trp Tyr
 325 330 335

Phe His Thr Leu Pro Tyr Leu Leu Trp Ala Met Pro Ala Arg Trp Leu
 340 345 350

Thr His Leu Leu Arg Leu Leu Val Leu Gly Leu Ile Glu Leu Ser Trp
 355 360 365

Asn Thr Tyr Pro Ser Thr Ser
 370 375

<210> 13
 <211> 271
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 13

Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
 1 5 10 15

Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
 20 25 30

Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu
 35 40 45

Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly
 50 55 60

Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met
 65 70 75 80

Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val
 85 90 95

Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys
 100 105 110

Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu
 115 120 125

Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys
 130 135 140

Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala
 145 150 155 160

Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val
 165 170 175

Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu
 180 185 190

Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala
 195 200 205

Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln
 210 215 220

Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu
 225 230 235 240

His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile
 245 250 255

Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe
260 265 270

<210> 14
<211> 258
<212> PRT
<213> Drosophila virilis

<400> 14

Ile Lys Tyr Leu Ala Phe Glu Pro Ala Ala Leu Pro Ile Val Ser Val
1 5 10 15

Leu Ile Val Leu Ala Glu Ala Val Ile Asn Val Leu Val Ile Gln Arg
20 25 30

Val Pro Tyr Thr Glu Ile Asp Trp Lys Ala Tyr Met Gln Glu Cys Glu
35 40 45

Gly Phe Leu Asn Gly Thr Thr Asn Tyr Ser Leu Leu Arg Gly Asp Thr
50 55 60

Gly Pro Leu Val Tyr Pro Ala Ala Phe Val Tyr Ile Tyr Ser Gly Leu
65 70 75 80

Tyr Tyr Leu Thr Gly Gln Gly Thr Asn Val Arg Leu Ala Gln Tyr Ile
85 90 95

Phe Ala Cys Ile Tyr Leu Leu Gln Met Cys Leu Val Leu Arg Leu Tyr
100 105 110

Thr Lys Ser Arg Lys Val Pro Pro Tyr Val Leu Val Leu Ser Ala Phe
115 120 125

Thr Ser Tyr Arg Ile His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp
130 135 140

Pro Val Ala Ile Leu Leu Leu Tyr Ala Ala Leu Asn Leu Phe Leu Asp
145 150 155 160

Gln Arg Trp Thr Leu Gly Ser Ile Cys Tyr Ser Leu Ala Val Gly Val
165 170 175

Lys Met Asn Ile Leu Leu Phe Ala Pro Ala Leu Leu Leu Phe Tyr Leu
180 185 190

Ala Asn Leu Gly Val Leu Arg Thr Leu Val Gln Leu Thr Ile Cys Ala
195 200 205

Val Leu Gln Leu Phe Ile Gly Ala Pro Phe Leu Arg Thr His Pro Met
210 215 220

Glu Tyr Leu Arg Gly Ser Phe Asp Leu Gly Arg Ile Phe Glu His Lys
225 230 235 240

Trp Thr Val Asn Tyr Arg Phe Leu Ser Lys Glu Leu Phe Glu Gln Arg
245 250 255

Glu Phe

<210> 15
<211> 60
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 15

Ile Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser
1 5 10 15

Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro
20 25 30

Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp
35 40 45

Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
50 55 60

<210> 16
<211> 58
<212> PRT
<213> *Drosophila virilis*

<400> 16

Leu Pro Phe Phe Leu Cys Asn Phe Ile Gly Val Ala Cys Ala Arg Ser
1 5 10 15

Leu His Tyr Gln Phe Tyr Ile Trp Tyr Phe His Ser Leu Pro Tyr Leu
20 25 30

Val Trp Ser Thr Pro Tyr Ser Leu Gly Val Arg Tyr Leu Ile Leu Gly
35 40 45

Ile Ile Glu Tyr Cys Trp Asn Thr Tyr Pro
50 55

<210> 17
<211> 270
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 17

Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro Leu
1 5 10 15

Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys Val
20 25 30

Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu Met
35 40 45

Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly Thr
50 55 60

Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met Met
65 70 75 80

Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val Phe
85 90 95

Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys Tyr
100 105 110

Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu Ser
115 120 125

Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe
130 135 140

Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser
145 150 155 160

Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val Ile
165 170 175

Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu
180 185 190

Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn
195 200 205

Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val
210 215 220

Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His
225 230 235 240

Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn
245 250 255

Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe
260 265 270

<210> 18
<211> 257
<212> PRT
<213> Drosophila melanogaster

<400> 18

Lys Tyr Leu Leu Leu Glu Pro Ala Ala Leu Pro Ile Val Gly Leu Phe
1 5 10 15

Val Leu Leu Ala Glu Leu Val Ile Asn Val Val Val Ile Gln Arg Val
20 25 30

Pro Tyr Thr Glu Ile Asp Trp Val Ala Tyr Met Gln Glu Cys Glu Gly
35 40 45

Phe Leu Asn Gly Thr Thr Asn Tyr Ser Leu Leu Arg Gly Asp Thr Gly
50 55 60

Pro Leu Val Tyr Pro Ala Ala Phe Val Tyr Ile Tyr Ser Ala Leu Tyr
65 70 75 80

Tyr Val Thr Ser His Gly Thr Asn Val Arg Leu Ala Gln Tyr Ile Phe
85 90 95

Ala Gly Ile Tyr Leu Leu Gln Leu Ala Leu Val Leu Arg Leu Tyr Ser
100 105 110

Lys Ser Arg Lys Val Pro Pro Tyr Val Leu Val Leu Ser Ala Phe Thr
115 120 125

Ser Tyr Arg Ile His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Pro
 130 135 140

Val Ala Val Leu Leu Leu Tyr Ala Ala Leu Asn Leu Phe Leu Asp Arg
 145 150 155 160

Arg Trp Thr Leu Gly Ser Thr Phe Phe Ser Leu Ala Val Gly Val Lys
 165 170 175

Met Asn Ile Leu Leu Phe Ala Pro Ala Leu Leu Leu Phe Tyr Leu Ala
 180 185 190

Asn Leu Gly Leu Leu Arg Thr Ile Leu Gln Leu Ala Val Cys Gly Val
 195 200 205

Ile Gln Leu Leu Leu Gly Ala Pro Phe Leu Leu Thr His Pro Val Glu
 210 215 220

Tyr Leu Arg Gly Ser Phe Asp Leu Gly Arg Ile Phe Glu His Lys Trp
 225 230 235 240

Thr Val Asn Tyr Arg Phe Leu Ser Arg Asp Val Phe Glu Asn Arg Thr
 245 250 255

Phe

<210> 19
 <211> 60
 <212> PRT
 <213> Saccharomyces cerevisiae

<400> 19

Ile Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser
 1 5 10 15

Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro
 20 25 30

Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp
 35 40 45

Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
 50 55 60

<210> 20

<211> 58
 <212> PRT
 <213> *Drosophila melanogaster*

<400> 20

Leu Pro Phe Phe Leu Cys Asn Leu Val Gly Val Ala Cys Ser Arg Ser
 1 5 10 15

Leu His Tyr Gln Phe Tyr Val Trp Tyr Phe His Ser Leu Pro Tyr Leu
 20 25 30

Ala Trp Ser Thr Pro Tyr Ser Leu Gly Val Arg Cys Leu Ile Leu Gly
 35 40 45

Leu Ile Glu Tyr Cys Trp Asn Thr Tyr Pro
 50 55

<210> 21
 <211> 1377
 <212> DNA
 <213> *Saccharomyces cerevisiae*

<400> 21

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gtgtatccag	caggccacgt	cttgatctac	aagatgatgt	actggctaac	agagggaa	tg	360	
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caaatggcgt	gttactacct	ttacatcta	ccaccgtgg	gtgtggtc	tt	ggcgtgcctc	480	
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ttaaagaagt	cccttg	cgct	ggtgatctcc	gcaacataca	gtatggctgt	gagcattaag	660	
atgaatgcgc	tg	ttgtat	ttt	ccctgcaatg	atgatttctc	tattcatcct	720	
aacgtaatcc	ttactttg	tt	ggatctcg	tt	gcgatgattg	catggcaagt	780	
gtgcccttcc	tgcgcagctt	tccgcaacag	tacctgcatt	gcgcttttaa	tttcggcagg		840	
aagtttatgt	accaatggag	tatcaattgg	caa	atgatg	gg	atgaagaggc	900	
aagaggttcc	acttggccct	tttaatcagc	cacctgatag	cgctcaccac	actgttcg	tc	960	

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<210> 22
 <211> 458
 <212> PRT
 <213> *Saccharomyces cerevisiae*

<400> 22

Met Glu Gly Glu Gln Ser Pro Gln Gly Glu Lys Ser Leu Gln Arg Lys
 1 5 10 15

Gln Phe Val Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly
 20 25 30

Val Arg Tyr Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro
 35 40 45

Leu Leu Ile Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys
 50 55 60

Val Ala Tyr Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu
 65 70 75 80

Met Ile Gln Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly
 85 90 95

Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met
 100 105 110

Met Tyr Trp Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val
 115 120 125

Phe Phe Arg Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys
 130 135 140

Tyr Tyr Leu Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu
 145 150 155 160

Ser Lys Arg Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys
 165 170 175

Phe Thr Thr Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala
 180 185 190

Ser Arg Cys His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val
 195 200 205

Ile Ser Ala Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu
 210 215 220

Leu Tyr Phe Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala
 225 230 235 240

Asn Val Ile Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln
 245 250 255

Val Ala Val Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu
 260 265 270

His Cys Ala Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile
 275 280 285

Asn Trp Gln Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His
 290 295 300

Leu Ala Leu Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val
 305 310 315 320

Thr Arg Tyr Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His
 325 330 335

Pro Leu Arg Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile
 340 345 350

Pro Phe Val Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg
 355 360 365

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile
 370 375 380

Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr
 385 390 395 400

Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala
405 410 415

Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu Leu Leu Leu Leu Ala
420 425 430

Leu Thr Gln Leu Ser Gly Ser Val Ala Leu Ala Lys Ser His Leu Arg
435 440 445

Thr Thr Ser Ser Met Glu Lys Lys Leu Asn
450 455

<210> 23
<211> 1395
<212> DNA
<213> Pichia pastoris

<400> 23
atgcctccga tagagccagc tgaaaggcca aagcttacgc tgaaaaatgt tatcggtgat 60
ctagtggctc ttattcaaaa cgttttatatt aaccagatt ttagtgtctt cgttgcacct 120
cttttatggg tagctgattc cattgttatc aaggatgaca ttggcactgt ttcttacaca 180
gatattgatt tttcttcata tatgcaacaa atctttaaaa ttcgacaagg agaattagat 240
tatagcaaca tatttggtga caccgggtcca ttgggtttacc cagccggcca tgttcatgct 300
tactcagtag tttcgtggta cagtgtgggt ggagaagacg tcagtttcgt tcaacaagca 360
tttgggtggg tatacctagg ttgcttggtt ctatccatca gctcctactt tttctctggc 420
ttagggaaaa tacctccggg ttattttggt ttggtggtag cgtccaagag actgcattca 480
atatttgtag tgagactctt caatgactgt ttaacaacat ttttgatggt ggcaactata 540
atcatccttc aacaagcaag tagctggagg aaagatggca caactattcc attatctgtc 600
cctgatgctg cagatacgtg cagtttagcc atctctgtaa agatgaatgc gctgctatac 660
ctcccagcat tctactact catatatctc atttgtgacg aaaatttgat taaagccttg 720
gcacctgttc tagttttgat attgggtgcaa gtaggagtcg gttattcggt cattttaccg 780
ttgcactatg atgatcaggc aaatgaaatt cgttctgcct actttagaca ggcttttgac 840
tttagtcgcc aatttcttta taagtggacg gttaattggc gctttttgag ccaagaaact 900
ttcaacaatg tccattttca ccagctcctg tttgctctcc atattattac gttagtcttg 960
ttcatcctca agttcctctc tcctaaaaac attggaaaac cgcttggtag atttgtgttg 1020
gacattttca aattttggaa gccaacctta tctccaacca atattatcaa cgacccagaa 1080

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agaagccag attttgttta caccgtcatg gctactacca acttaatagg ggtgcttttt 1140
gcaagatctt tacactacca gttcctaagc tggatgcgt tctctttgcc atatctcctt 1200
tacaaggctc gtctgaactt tatagcatct attattgttt atgccgctca cgagtattgc 1260
tggttggttt tcccagctac agaacaaagt tccgcgttgt tggatatctat cttactactt 1320
atcctgattc tcatttttac caacgaacag ttatttcctt ctcaatcggg ccctgcagaa 1380
aaaaagaata cataa 1395

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<210> 24
<211> 464
<212> PRT
<213> Pichia pastoris

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<400> 24

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Met Pro Pro Ile Glu Pro Ala Glu Arg Pro Lys Leu Thr Leu Lys Asn
1          5          10          15

```

```

Val Ile Gly Asp Leu Val Ala Leu Ile Gln Asn Val Leu Phe Asn Pro
20          25          30

```

```

Asp Phe Ser Val Phe Val Ala Pro Leu Leu Trp Leu Ala Asp Ser Ile
35          40          45

```

```

Val Ile Lys Val Ile Ile Gly Thr Val Ser Tyr Thr Asp Ile Asp Phe
50          55          60

```

```

Ser Ser Tyr Met Gln Gln Ile Phe Lys Ile Arg Gln Gly Glu Leu Asp
65          70          75          80

```

```

Tyr Ser Asn Ile Phe Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly
85          90          95

```

```

His Val His Ala Tyr Ser Val Leu Ser Trp Tyr Ser Asp Gly Gly Glu
100          105          110

```

```

Asp Val Ser Phe Val Gln Gln Ala Phe Gly Trp Leu Tyr Leu Gly Cys
115          120          125

```

```

Leu Leu Leu Ser Ile Ser Ser Tyr Phe Phe Ser Gly Leu Gly Lys Ile
130          135          140

```

```

Pro Pro Val Tyr Phe Val Leu Leu Val Ala Ser Lys Arg Leu His Ser
145          150          155          160

```

Ile Phe Val Leu Arg Leu Phe Asn Asp Cys Leu Thr Thr Phe Leu Met
 165 170 175

Leu Ala Thr Ile Ile Ile Leu Gln Gln Ala Ser Ser Trp Arg Lys Asp
 180 185 190

Gly Thr Thr Ile Pro Leu Ser Val Pro Asp Ala Ala Asp Thr Tyr Ser
 195 200 205

Leu Ala Ile Ser Val Lys Met Asn Ala Leu Leu Tyr Leu Pro Ala Phe
 210 215 220

Leu Leu Leu Ile Tyr Leu Ile Cys Asp Glu Asn Leu Ile Lys Ala Leu
 225 230 235 240

Ala Pro Val Leu Val Leu Ile Leu Val Gln Val Gly Val Gly Tyr Ser
 245 250 255

Phe Ile Leu Pro Leu His Tyr Asp Asp Gln Ala Asn Glu Ile Arg Ser
 260 265 270

Ala Tyr Phe Arg Gln Ala Phe Asp Phe Ser Arg Gln Phe Leu Tyr Lys
 275 280 285

Trp Thr Val Asn Trp Arg Phe Leu Ser Gln Glu Thr Phe Asn Asn Val
 290 295 300

His Phe His Gln Leu Leu Phe Ala Leu His Ile Ile Thr Leu Val Leu
 305 310 315 320

Phe Ile Leu Lys Phe Leu Ser Pro Lys Asn Ile Gly Lys Pro Leu Gly
 325 330 335

Arg Phe Val Leu Asp Ile Phe Lys Phe Trp Lys Pro Thr Leu Ser Pro
 340 345 350

Thr Asn Ile Ile Asn Asp Pro Glu Arg Ser Pro Asp Phe Val Tyr Thr
 355 360 365

Val Met Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala Arg Ser Leu
 370 375 380

His Tyr Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro Tyr Leu Leu
 385 390 395 400

Tyr Lys Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val Tyr Ala Ala
405 410 415

His Glu Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln Ser Ser Ala
420 425 430

Leu Leu Val Ser Ile Leu Leu Leu Ile Leu Ile Leu Ile Phe Thr Asn
435 440 445

Glu Gln Leu Phe Pro Ser Gln Ser Val Pro Ala Glu Lys Lys Asn Thr
450 455 460

<210> 25
<211> 423
<212> PRT
<213> Pichia pastoris

<220>
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<222> (209)..(223)
<223> Low-complexity sequence

<220>
<221> MISC_FEATURE
<222> (235)..(246)
<223> Low-complexity sequence

<400> 25

Arg Pro Lys Leu Thr Leu Lys Asn Val Ile Gly Asp Leu Val Ala Leu
1 5 10 15

Ile Gln Asn Val Leu Phe Asn Pro Asp Phe Ser Val Phe Val Ala Pro
20 25 30

Leu Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr
35 40 45

Val Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe
50 55 60

Lys Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr
65 70 75 80

Gly Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu
85 90 95

Ser Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala
100 105 110

Phe Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr
115 120 125

Phe Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu
130 135 140

Val Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn
145 150 155 160

Asp Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln
165 170 175

Gln Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val
180 185 190

Pro Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn
195 200 205

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys
210 215 220

Asp Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa
225 230 235 240

Xaa Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp
245 250 255

Asp Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp
260 265 270

Phe Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu
275 280 285

Ser Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala
290 295 300

Leu His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro
305 310 315 320

Lys Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys
325 330 335

Phe Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu
340 345 350

Arg Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile
355 360 365

Gly Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr
370 375 380

Ala Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile
385 390 395 400

Ala Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe
405 410 415

Pro Ala Thr Glu Gln Ser Ser
420

<210> 26
<211> 398
<212> PRT
<213> *Saccharomyces cerevisiae*

<400> 26

Arg Pro Pro Leu Asp Leu Trp Gln Asp Leu Lys Asp Gly Val Arg Tyr
1 5 10 15

Val Ile Phe Asp Cys Arg Ala Asn Leu Ile Val Met Pro Leu Leu Ile
20 25 30

Leu Phe Glu Ser Met Leu Cys Lys Ile Ile Ile Lys Lys Val Ala Tyr
35 40 45

Thr Glu Ile Asp Tyr Lys Ala Tyr Met Glu Gln Ile Glu Met Ile Gln
50 55 60

Leu Asp Gly Met Leu Asp Tyr Ser Gln Val Ser Gly Gly Thr Gly Pro
65 70 75 80

Leu Val Tyr Pro Ala Gly His Val Leu Ile Tyr Lys Met Met Tyr Trp
85 90 95

Leu Thr Glu Gly Met Asp His Val Glu Arg Gly Gln Val Phe Phe Arg
100 105 110

Tyr Leu Tyr Leu Leu Thr Leu Ala Leu Gln Met Ala Cys Tyr Tyr Leu
115 120 125

Leu His Leu Pro Pro Trp Cys Val Val Leu Ala Cys Leu Ser Lys Arg
130 135 140

Leu His Ser Ile Tyr Val Leu Arg Leu Phe Asn Asp Cys Phe Thr Thr
145 150 155 160

Leu Phe Met Val Val Thr Val Leu Gly Ala Ile Val Ala Ser Arg Cys
165 170 175

His Gln Arg Pro Lys Leu Lys Lys Ser Leu Ala Leu Val Ile Ser Ala
180 185 190

Thr Tyr Ser Met Ala Val Ser Ile Lys Met Asn Ala Leu Leu Tyr Phe
195 200 205

Pro Ala Met Met Ile Ser Leu Phe Ile Leu Asn Asp Ala Asn Val Ile
210 215 220

Leu Thr Leu Leu Asp Leu Val Ala Met Ile Ala Trp Gln Val Ala Val
225 230 235 240

Ala Val Pro Phe Leu Arg Ser Phe Pro Gln Gln Tyr Leu His Cys Ala
245 250 255

Phe Asn Phe Gly Arg Lys Phe Met Tyr Gln Trp Ser Ile Asn Trp Gln
260 265 270

Met Met Asp Glu Glu Ala Phe Asn Asp Lys Arg Phe His Leu Ala Leu
275 280 285

Leu Ile Ser His Leu Ile Ala Leu Thr Thr Leu Phe Val Thr Arg Tyr
290 295 300

Pro Arg Ile Leu Pro Asp Leu Trp Ser Ser Leu Cys His Pro Leu Arg
305 310 315 320

Lys Asn Ala Val Leu Asn Ala Asn Pro Ala Lys Thr Ile Pro Phe Val
325 330 335

Leu Ile Ala Ser Asn Phe Ile Gly Val Leu Phe Ser Arg Ser Leu His
340 345 350

Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Ile Leu Ile Phe
355 360 365

Trp Ser Gly Met Pro Phe Phe Val Gly Pro Ile Trp Tyr Val Leu His
 370 375 380

Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ser Gln Ala Ser
 385 390 395

<210> 27
 <211> 398
 <212> PRT
 <213> Pichia pastoris

<220>
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 <222> (183)..(197)
 <223> Low-complexity sequence

<220>
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 <222> (209)..(220)
 <223> Low-complexity sequence

<400> 27

Ser Val Phe Val Ala Pro Leu Leu Trp Leu Ala Asp Ser Ile Val Ile
 1 5 10 15

Lys Val Ile Ile Gly Thr Val Ser Tyr Thr Asp Ile Asp Phe Ser Ser
 20 25 30

Tyr Met Gln Gln Ile Phe Lys Ile Arg Gln Gly Glu Leu Asp Tyr Ser
 35 40 45

Asn Ile Phe Gly Asp Thr Gly Pro Leu Val Tyr Pro Ala Gly His Val
 50 55 60

His Ala Tyr Ser Val Leu Ser Trp Tyr Ser Asp Gly Gly Glu Asp Val
 65 70 75 80

Ser Phe Val Gln Gln Ala Phe Gly Trp Leu Tyr Leu Gly Cys Leu Leu
 85 90 95

Leu Ser Ile Ser Ser Tyr Phe Phe Ser Gly Leu Gly Lys Ile Pro Pro
 100 105 110

Val Tyr Phe Val Leu Leu Val Ala Ser Lys Arg Leu His Ser Ile Phe
 115 120 125

Val Leu Arg Leu Phe Asn Asp Cys Leu Thr Thr Phe Leu Met Leu Ala

130	135	140
Thr Ile Ile Ile Leu Gln Gln Ala Ser Ser Trp Arg Lys Asp Gly Thr		
145	150	155 160
Thr Ile Pro Leu Ser Val Pro Asp Ala Ala Asp Thr Tyr Ser Leu Ala		
	165	170 175
Ile Ser Val Lys Met Asn Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa		
	180	185 190
Xaa Xaa Xaa Xaa Xaa Cys Asp Glu Asn Leu Ile Lys Ala Leu Ala Pro		
	195	200 205
Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile		
	210	215 220
Leu Pro Leu His Tyr Asp Asp Gln Ala Asn Glu Ile Arg Ser Ala Tyr		
	225	230 235 240
Phe Arg Gln Ala Phe Asp Phe Ser Arg Gln Phe Leu Tyr Lys Trp Thr		
	245	250 255
Val Asn Trp Arg Phe Leu Ser Gln Glu Thr Phe Asn Asn Val His Phe		
	260	265 270
His Gln Leu Leu Phe Ala Leu His Ile Ile Thr Leu Val Leu Phe Ile		
	275	280 285
Leu Lys Phe Leu Ser Pro Lys Asn Ile Gly Lys Pro Leu Gly Arg Phe		
	290	295 300
Val Leu Asp Ile Phe Lys Phe Trp Lys Pro Thr Leu Ser Pro Thr Asn		
	305	310 315 320
Ile Ile Asn Asp Pro Glu Arg Ser Pro Asp Phe Val Tyr Thr Val Met		
	325	330 335
Ala Thr Thr Asn Leu Ile Gly Val Leu Phe Ala Arg Ser Leu His Tyr		
	340	345 350
Gln Phe Leu Ser Trp Tyr Ala Phe Ser Leu Pro Tyr Leu Leu Tyr Lys		
	355	360 365
Ala Arg Leu Asn Phe Ile Ala Ser Ile Ile Val Tyr Ala Ala His Glu		

370

375

380

Tyr Cys Trp Leu Val Phe Pro Ala Thr Glu Gln Ser Ser Ala
 385 390 395

<210> 28

<211> 373

<212> PRT

<213> Neurospora crassa

<400> 28

Ser Lys Leu Ile Pro Pro Ala Leu Phe Leu Val Asp Ala Leu Leu Cys
 1 5 10 15

Gly Leu Ile Ile Trp Lys Val Pro Tyr Thr Glu Ile Asp Trp Ala Ala
 20 25 30

Tyr Met Glu Gln Val Ser Gln Ile Leu Ser Gly Glu Arg Asp Tyr Thr
 35 40 45

Lys Val Arg Gly Gly Thr Gly Pro Leu Val Tyr Pro Ala Ala His Val
 50 55 60

Tyr Ile Tyr Thr Gly Leu Tyr His Leu Thr Asp Glu Gly Arg Asn Ile
 65 70 75 80

Leu Leu Ala Gln Gln Leu Phe Ala Gly Leu Tyr Met Val Thr Leu Ala
 85 90 95

Val Val Met Gly Cys Tyr Trp Gln Ala Lys Ala Pro Pro Tyr Leu Phe
 100 105 110

Pro Leu Leu Thr Leu Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg
 115 120 125

Cys Phe Asn Asp Cys Phe Ala Val Leu Phe Leu Trp Leu Ala Ile Phe
 130 135 140

Phe Phe Gln Arg Arg Asn Trp Gln Ala Gly Ala Leu Leu Tyr Thr Leu
 145 150 155 160

Gly Leu Gly Val Lys Met Thr Leu Leu Leu Ser Leu Pro Ala Val Gly
 165 170 175

Ile Val Leu Phe Leu Gly Ser Gly Ser Phe Val Thr Thr Leu Gln Leu
 180 185 190

Val Ala Thr Met Gly Leu Val Gln Ile Leu Ile Gly Val Pro Phe Leu
195 200 205

Ala His Tyr Pro Thr Glu Tyr Leu Ser Arg Ala Phe Glu Leu Ser Arg
210 215 220

Gln Phe Phe Phe Lys Trp Thr Val Asn Trp Arg Phe Val Gly Glu Glu
225 230 235 240

Ile Phe Leu Ser Lys Gly Phe Ala Leu Thr Leu Leu Ala Leu His Val
245 250 255

Leu Val Leu Gly Ile Phe Ile Thr Thr Arg Trp Ile Lys Pro Ala Arg
260 265 270

Lys Ser Leu Val Gln Leu Ile Ser Pro Val Leu Leu Ala Gly Lys Pro
275 280 285

Pro Leu Thr Val Pro Glu His Arg Ala Ala Ala Arg Asp Val Thr Pro
290 295 300

Arg Tyr Ile Met Thr Thr Ile Leu Ser Ala Asn Ala Val Gly Leu Leu
305 310 315 320

Phe Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Tyr Val Ala Trp Ser
325 330 335

Thr Pro Phe Leu Leu Trp Arg Ala Gly Leu His Pro Val Leu Val Tyr
340 345 350

Leu Leu Trp Ala Val His Glu Trp Ala Trp Asn Val Phe Pro Ser Thr
355 360 365

Pro Ala Ser Ser Ala
370

<210> 29
<211> 390
<212> PRT
<213> Pichia pastoris

<220>
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<222> (176)..(190)
<223> Low-complexity sequence

<220>
<221> MISC_FEATURE
<222> (202)..(213)
<223> Low-complexity sequence

<400> 29

Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr Val
1 5 10 15

Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe Lys
20 25 30

Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr Gly
35 40 45

Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu Ser
50 55 60

Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala Phe
65 70 75 80

Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr Phe
85 90 95

Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu Val
100 105 110

Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp
115 120 125

Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln Gln
130 135 140

Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val Pro
145 150 155 160

Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn Xaa
165 170 175

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Asp
180 185 190

Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa
195 200 205

Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp Asp
210 215 220

Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp Phe
225 230 235 240

Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu Ser
245 250 255

Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala Leu
260 265 270

His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro Lys
275 280 285

Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe
290 295 300

Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg
305 310 315 320

Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly
325 330 335

Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala
340 345 350

Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala
355 360 365

Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro
370 375 380

Ala Thr Glu Gln Ser Ser
385 390

<210> 30
<211> 355
<212> PRT
<213> Schizosaccharomyces pombe

<400> 30

Leu Leu Leu Leu Glu Ile Pro Phe Val Phe Ala Ile Ile Ser Lys Val
1 5 10 15

Pro Tyr Thr Glu Ile Asp Trp Ile Ala Tyr Met Glu Gln Val Asn Ser

20					25					30					
Phe	Leu	Leu	Gly	Glu	Arg	Asp	Tyr	Lys	Ser	Leu	Val	Gly	Cys	Thr	Gly
		35					40					45			
Pro	Leu	Val	Tyr	Pro	Gly	Gly	His	Val	Phe	Leu	Tyr	Thr	Leu	Leu	Tyr
	50					55					60				
Tyr	Leu	Thr	Asp	Gly	Gly	Thr	Asn	Ile	Val	Arg	Ala	Gln	Tyr	Ile	Phe
65				70						75					80
Ala	Phe	Val	Tyr	Trp	Ile	Thr	Thr	Ala	Ile	Val	Gly	Tyr	Leu	Phe	Lys
				85					90					95	
Ile	Val	Arg	Ala	Pro	Phe	Tyr	Ile	Tyr	Val	Leu	Leu	Ile	Leu	Ser	Lys
			100					105					110		
Arg	Leu	His	Ser	Ile	Phe	Ile	Leu	Arg	Leu	Phe	Asn	Asp	Gly	Phe	Asn
		115					120					125			
Ser	Leu	Phe	Ser	Ser	Leu	Phe	Ile	Leu	Ser	Ser	Cys	Lys	Lys	Lys	Trp
	130					135					140				
Val	Arg	Ala	Ser	Ile	Leu	Leu	Ser	Val	Ala	Cys	Ser	Val	Lys	Met	Ser
145					150					155					160
Ser	Leu	Leu	Tyr	Val	Pro	Ala	Tyr	Leu	Val	Leu	Leu	Leu	Gln	Ile	Leu
				165					170					175	
Gly	Pro	Lys	Lys	Thr	Trp	Met	His	Ile	Phe	Val	Ile	Ile	Ile	Val	Gln
			180					185					190		
Ile	Leu	Phe	Ser	Ile	Pro	Phe	Leu	Ala	Tyr	Phe	Trp	Ser	Tyr	Trp	Thr
		195					200					205			
Gln	Ala	Phe	Asp	Phe	Gly	Arg	Ala	Phe	Asp	Tyr	Lys	Trp	Thr	Val	Asn
	210					215					220				
Trp	Arg	Phe	Ile	Pro	Arg	Ser	Ile	Phe	Glu	Ser	Thr	Ser	Phe	Ser	Thr
225					230					235					240
Ser	Ile	Leu	Phe	Leu	His	Val	Ala	Leu	Leu	Val	Ala	Phe	Thr	Cys	Lys
				245					250					255	
His	Trp	Asn	Lys	Leu	Ser	Arg	Ala	Thr	Pro	Phe	Ala	Met	Val	Asn	Ser

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                260                265                270
Met Leu Thr Leu Lys Pro Leu Pro Lys Leu Gln Leu Ala Thr Pro Asn
   275                280                285

Phe Ile Phe Thr Ala Leu Ala Thr Ser Asn Leu Ile Gly Ile Leu Cys
   290                295                300

Ala Arg Ser Leu His Tyr Gln Phe Tyr Ala Trp Phe Ala Trp Tyr Ser
  305                310                315                320

Pro Tyr Leu Cys Tyr Gln Ala Ser Phe Pro Ala Pro Ile Val Ile Gly
   325                330                335

Leu Trp Met Leu Gln Glu Tyr Ala Trp Asn Val Phe Pro Ser Thr Lys
   340                345                350

Leu Ser Ser
   355

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<210> 31
<211> 390
<212> PRT
<213> Pichia pastoris

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<220>
<221> MISC_FEATURE
<222> (176)..(190)
<223> Low-complexity sequence

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<220>
<221> MISC_FEATURE
<222> (202)..(213)
<223> Low-complexity sequence

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<400> 31

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Leu Trp Leu Ala Asp Ser Ile Val Ile Lys Val Ile Ile Gly Thr Val
1          5          10          15

```

```

Ser Tyr Thr Asp Ile Asp Phe Ser Ser Tyr Met Gln Gln Ile Phe Lys
   20          25          30

```

```

Ile Arg Gln Gly Glu Leu Asp Tyr Ser Asn Ile Phe Gly Asp Thr Gly
   35          40          45

```

```

Pro Leu Val Tyr Pro Ala Gly His Val His Ala Tyr Ser Val Leu Ser
   50          55          60

```

Trp Tyr Ser Asp Gly Gly Glu Asp Val Ser Phe Val Gln Gln Ala Phe
 65 70 75 80

Gly Trp Leu Tyr Leu Gly Cys Leu Leu Leu Ser Ile Ser Ser Tyr Phe
 85 90 95

Phe Ser Gly Leu Gly Lys Ile Pro Pro Val Tyr Phe Val Leu Leu Val
 100 105 110

Ala Ser Lys Arg Leu His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp
 115 120 125

Cys Leu Thr Thr Phe Leu Met Leu Ala Thr Ile Ile Ile Leu Gln Gln
 130 135 140

Ala Ser Ser Trp Arg Lys Asp Gly Thr Thr Ile Pro Leu Ser Val Pro
 145 150 155 160

Asp Ala Ala Asp Thr Tyr Ser Leu Ala Ile Ser Val Lys Met Asn Xaa
 165 170 175

Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Cys Asp
 180 185 190

Glu Asn Leu Ile Lys Ala Leu Ala Pro Xaa Xaa Xaa Xaa Xaa Xaa Xaa
 195 200 205

Xaa Xaa Xaa Xaa Xaa Tyr Ser Phe Ile Leu Pro Leu His Tyr Asp Asp
 210 215 220

Gln Ala Asn Glu Ile Arg Ser Ala Tyr Phe Arg Gln Ala Phe Asp Phe
 225 230 235 240

Ser Arg Gln Phe Leu Tyr Lys Trp Thr Val Asn Trp Arg Phe Leu Ser
 245 250 255

Gln Glu Thr Phe Asn Asn Val His Phe His Gln Leu Leu Phe Ala Leu
 260 265 270

His Ile Ile Thr Leu Val Leu Phe Ile Leu Lys Phe Leu Ser Pro Lys
 275 280 285

Asn Ile Gly Lys Pro Leu Gly Arg Phe Val Leu Asp Ile Phe Lys Phe
 290 295 300

Trp Lys Pro Thr Leu Ser Pro Thr Asn Ile Ile Asn Asp Pro Glu Arg
305 310 315 320

Ser Pro Asp Phe Val Tyr Thr Val Met Ala Thr Thr Asn Leu Ile Gly
325 330 335

Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr Ala
340 345 350

Phe Ser Leu Pro Tyr Leu Leu Tyr Lys Ala Arg Leu Asn Phe Ile Ala
355 360 365

Ser Ile Ile Val Tyr Ala Ala His Glu Tyr Cys Trp Leu Val Phe Pro
370 375 380

Ala Thr Glu Gln Ser Ser
385 390

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<212> PRT
<213> Arabidopsis thaliana

<400> 32

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Phe Leu Gly Gly Glu Arg Asp Tyr Gly Asn Leu Lys Gly Asp Thr Gly
35 40 45

Pro Leu Val Tyr Pro Ala Gly Phe Leu Tyr Val Tyr Ser Ala Val Gln
50 55 60

Asn Leu Thr Gly Gly Glu Val Tyr Pro Ala Gln Ile Leu Phe Gly Val
65 70 75 80

Leu Tyr Ile Val Asn Leu Gly Ile Val Leu Ile Ile Tyr Val Lys Thr
85 90 95

Asp Val Val Pro Trp Trp Ala Leu Ser Leu Leu Cys Leu Ser Lys Arg
100 105 110

Ile His Ser Ile Phe Val Leu Arg Leu Phe Asn Asp Cys Phe Ala Met
 115 120 125

Thr Leu Leu His Ala Ser Met Ala Leu Phe Leu Tyr Arg Lys Trp His
 130 135 140

Leu Gly Met Leu Val Phe Ser Gly Ala Val Ser Val Lys Met Asn Val
 145 150 155 160

Leu Leu Tyr Ala Pro Thr Leu Leu Leu Leu Leu Lys Ala Met Asn
 165 170 175

Ile Ile Gly Val Val Ser Ala Leu Ala Gly Ala Ala Leu Ala Gln Ile
 180 185 190

Leu Val Gly Leu Pro Phe Leu Ile Thr Tyr Pro Val Ser Tyr Ile Ala
 195 200 205

Asn Ala Phe Asp Leu Gly Arg Val Phe Ile His Phe Trp Ser Val Asn
 210 215 220

Phe Lys Phe Val Pro Glu Arg Val Phe Val Ser Lys Glu Phe Ala Val
 225 230 235 240

Cys Leu Leu Ile Ala His Leu Phe Leu Leu Val Ala Phe Ala Asn Tyr
 245 250 255

Lys Trp Cys Lys His Glu Gly Gly Ile Ile Gly Phe Met Arg Ser Arg
 260 265 270

His Phe Phe Leu Thr Leu Pro Ser Ser Leu Ser Phe Ser Asp Val Ser
 275 280 285

Ala Ser Arg Ile Ile Thr Lys Glu His Val Val Thr Ala Met Phe Val
 290 295 300

Gly Asn Phe Ile Gly Ile Val Phe Ala Arg Ser Leu His Tyr Gln Phe
 305 310 315 320

Tyr Ser Trp Tyr Phe Tyr Ser Leu Pro Tyr Leu Leu Trp Arg Thr Pro
 325 330 335

Phe Pro Thr Trp Leu Arg Leu Ile Met Phe Leu Gly Ile Glu Leu Cys
 340 345 350

Trp Asn Val Tyr Pro Ser Thr Pro Ser Ser Ser
 355 360

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 <211> 428
 <212> DNA
 <213> Kluyveromyces lactis

<400> 33
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 aatgttccgt atccgctatg tgtgctatgg tacctaacac atgagtgggtg ctggaacagc 300
 tatccgccaa acgctactgc atccacactg ctacacgcgt gtaacacata ctgttattgg 360
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 <211> 142
 <212> PRT
 <213> Kluyveromyces lactis

<400> 34

Phe Val Tyr Lys Leu Ile Pro Thr Asn Met Asn Thr Pro Ala Gly Leu
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Leu Lys Ile Gly Lys Ala Asn Leu Leu His Pro Phe Thr Asp Ala Val
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Phe Ser Ala Met Arg Val Asn Ala Glu Gln Ile Ala Tyr Ile Leu Leu
 35 40 45

Val Thr Asn Tyr Ile Gly Val Leu Phe Ala Arg Ser Leu His Tyr Gln
 50 55 60

Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Val Leu Leu Asn Trp Ala
 65 70 75 80

Asn Val Pro Tyr Pro Leu Cys Val Leu Trp Tyr Leu Thr His Glu Trp
 85 90 95

Cys Trp Asn Ser Tyr Pro Pro Asn Ala Thr Ala Ser Thr Leu Leu His
 100 105 110

Ala Cys Asn Thr Tyr Cys Tyr Trp Leu Tyr Ser Glx Glu Asp Pro Gln
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Thr Arg Lys Val Val Ile Thr Lys Gln His Thr Arg Lys Leu
130 135 140

<210> 35
<211> 102
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<400> 35

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Val Asn Ala Glu Gln Ile Ala Tyr Ile Leu Leu Val Thr Asn Tyr Ile
20 25 30

Gly Val Leu Phe Ala Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr
35 40 45

His Trp Thr Leu Pro Val Leu Leu Asn Trp Ala Asn Val Pro Tyr Pro
50 55 60

Leu Cys Val Leu Trp Tyr Leu Thr His Glu Trp Cys Trp Asn Ser Tyr
65 70 75 80

Pro Pro Asn Ala Thr Ala Ser Thr Leu Leu His Ala Cys Asn Thr Tyr
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Cys Tyr Trp Leu Tyr Ser
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<213> Kluyveromyces lactis

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Glu Asp Pro Gln Thr Arg Lys Val Val Ile Thr Lys Gln His Thr Arg
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<211> 117
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<213> Saccharomyces cerevisiae

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Val Leu Phe Ser Arg Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His
35 40 45

Trp Thr Leu Pro Ile Leu Ile Phe Trp Ser Gly Met Pro Phe Phe Val
50 55 60

Gly Pro Ile Trp Tyr Val Leu His Glu Trp Cys Trp Asn Ser Tyr Pro
65 70 75 80

Pro Asn Ser Gln Ala Ser Thr Leu Leu Leu Ala Leu Asn Thr Val Leu
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Lys Ser His Leu Arg
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<210> 38

<211> 96

<212> PRT

<213> Kluyveromyces lactis

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Ala Tyr Ile Leu Leu Val Thr Asn Tyr Ile Gly Val Leu Phe Ala Arg
20 25 30

Ser Leu His Tyr Gln Phe Leu Ser Trp Tyr His Trp Thr Leu Pro Val
35 40 45

Leu Leu Asn Trp Ala Asn Val Pro Tyr Pro Leu Cys Val Leu Trp Tyr
50 55 60

Leu Thr His Glu Trp Cys Trp Asn Ser Tyr Pro Pro Asn Ala Thr Ala
65 70 75 80

Ser Thr Leu Leu His Ala Cys Asn Thr Tyr Cys Tyr Trp Leu Tyr Ser
85 90 95

<210> 39
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<213> Kluyveromyces lactis

<400> 39

Glu Asp Pro Gln Thr Arg Lys
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<210> 40
<211> 106
<212> PRT
<213> Arabidopsis thaliana

<400> 40

Phe Ser Asp Val Ser Ala Ser Arg Ile Ile Thr Lys Glu His Val Val
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Thr Ala Met Phe Val Gly Asn Phe Ile Gly Ile Val Phe Ala Arg Ser
20 25 30

Leu His Tyr Gln Phe Tyr Ser Trp Tyr Phe Tyr Ser Leu Pro Tyr Leu
35 40 45

Leu Trp Arg Thr Pro Phe Pro Thr Trp Leu Arg Leu Ile Met Phe Leu
50 55 60

Gly Ile Glu Leu Cys Trp Asn Val Tyr Pro Ser Thr Pro Ser Ser Ser
65 70 75 80

Gly Leu Leu Leu Cys Leu His Leu Ile Ile Leu Val Gly Leu Trp Leu
85 90 95

Ala Pro Ser Val Asp Pro Tyr Gln Leu Lys
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<223> signal tetrapeptide

<400> 41

His Asp Glu Leu
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<210> 42

<211> 4

<212> PRT

<213> artificial

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<223> Signal tetrapeptide

<400> 42

Lys Asp Glu Leu
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<210> 43

<211> 0

<212> DNA

<213> Kluyveromyces lactis

<400> 43

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<210> 44

<211> 0

<212> PRT

<213> Kluyveromyces lactis

<400> 44

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<210> 45

<211> 1617

<212> DNA

<213> Mus musculus

<400> 45

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 <211> 536
 <212> PRT
 <213> Mus musculus

<400> 46

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			20					25					30		

Pro	Arg	Glu	Leu	Ala	Ser	Leu	Ser	Pro	Asn	Leu	Ile	Ser	Ser	Phe	Phe
		35					40					45			

Trp	Asn	Asn	Ala	Pro	Val	Thr	Pro	Gln	Ala	Ser	Pro	Glu	Pro	Gly	Asp
	50					55					60				

Pro Asp Leu Leu Arg Thr Pro Leu Tyr Ser His Ser Pro Leu Leu Gln
 65 70 75 80

Pro Leu Ser Pro Ser Lys Ala Thr Glu Glu Leu His Arg Val Asp Phe
 85 90 95

Val Leu Pro Glu Asp Thr Thr Glu Tyr Phe Val Arg Thr Lys Ala Gly
 100 105 110

Gly Val Cys Phe Lys Pro Gly Thr Arg Met Leu Glu Lys Pro Ser Pro
 115 120 125

Gly Arg Thr Glu Glu Lys Thr Glu Val Ser Glu Gly Ser Ser Ala Arg
 130 135 140

Gly Pro Ala Arg Arg Pro Met Arg His Val Leu Ser Ser Arg Glu Arg
 145 150 155 160

Leu Gly Ser Arg Gly Thr Arg Arg Lys Trp Val Glu Cys Val Cys Leu
 165 170 175

Pro Gly Trp His Gly Pro Ser Cys Gly Val Pro Thr Val Val Gln Tyr
 180 185 190

Ser Asn Leu Pro Thr Lys Glu Arg Leu Val Pro Arg Glu Val Pro Arg
 195 200 205

Arg Val Ile Asn Ala Ile Asn Ile Asn His Glu Phe Asp Leu Leu Asp
 210 215 220

Val Arg Phe His Glu Leu Gly Asp Val Val Asp Ala Phe Val Val Cys
 225 230 235 240

Asp Ser Asn Phe Thr Ala Tyr Gly Glu Pro Arg Pro Leu Lys Phe Arg
 245 250 255

Glu Met Leu Thr Asn Gly Thr Phe Glu Tyr Ile Arg His Lys Val Leu
 260 265 270

Tyr Val Phe Leu Asp His Phe Pro Pro Gly Gly Arg Gln Asp Gly Trp
 275 280 285

Ile Ala Asp Asp Tyr Leu Arg Thr Phe Leu Thr Gln Asp Gly Val Ser
 290 295 300

Arg Leu Arg Asn Leu Arg Pro Asp Asp Val Phe Ile Ile Asp Asp Ala
 305 310 315 320

Asp Glu Ile Pro Ala Arg Asp Gly Val Leu Phe Leu Lys Leu Tyr Asp
 325 330 335

Gly Trp Thr Glu Pro Phe Ala Phe His Met Arg Lys Ser Leu Tyr Gly
 340 345 350

Phe Phe Trp Lys Gln Pro Gly Thr Leu Glu Val Val Ser Gly Cys Thr
 355 360 365

Met Asp Met Leu Gln Ala Val Tyr Gly Leu Asp Gly Ile Arg Leu Arg
 370 375 380

Arg Arg Gln Tyr Tyr Thr Met Pro Asn Phe Arg Gln Tyr Glu Asn Arg
 385 390 395 400

Thr Gly His Ile Leu Val Gln Trp Ser Leu Gly Ser Pro Leu His Phe
 405 410 415

Ala Gly Trp His Cys Ser Trp Cys Phe Thr Pro Glu Gly Ile Tyr Phe
 420 425 430

Lys Leu Val Ser Ala Gln Asn Gly Asp Phe Pro Arg Trp Gly Asp Tyr
 435 440 445

Glu Asp Lys Arg Asp Leu Asn Tyr Ile Arg Ser Leu Ile Arg Thr Gly
 450 455 460

Gly Trp Phe Asp Gly Thr Gln Gln Glu Tyr Pro Pro Ala Asp Pro Ser
 465 470 475 480

Glu His Met Tyr Ala Pro Lys Tyr Leu Leu Lys Asn Tyr Asp Gln Phe
 485 490 495

Arg Tyr Leu Leu Glu Asn Pro Tyr Arg Glu Pro Lys Ser Thr Val Glu
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 515 520 525

Gly Lys Leu Asp Thr Ala Glu Gly
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<210> 51
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<212> PRT
<213> Mus musculus

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<400> 51

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 20 25 30

Ser Gly Pro Ala Ala Phe Arg Leu Thr Glu Lys Phe Val Leu Leu Leu
 35 40 45

Val Phe Ser Ala Phe Ile Thr Leu Cys Phe Gly Ala Ile Phe Phe Leu
 50 55 60

Pro Asp Ser Ser Lys Leu Leu Ser Gly Val Leu Phe His Ser Asn Pro
 65 70 75 80

Ala Leu Gln Pro Pro Ala Glu His Lys Pro Gly Leu Gly Ala Arg Ala
 85 90 95

Glu Asp Ala Ala Glu Gly Arg Val Arg His Arg Glu Glu Gly Ala Pro
 100 105 110

Gly Asp Pro Gly Ala Gly Leu Glu Asp Asn Leu Ala Arg Ile Arg Glu
 115 120 125

Asn His Glu Arg Ala Leu Arg Glu Ala Lys Glu Thr Leu Gln Lys Leu
 130 135 140

Pro Glu Glu Ile Gln Arg Asp Ile Leu Leu Glu Lys Glu Lys Val Ala
 145 150 155 160

Gln Asp Gln Leu Arg Asp Lys Asp Leu Phe Arg Gly Leu Pro Lys Val
 165 170 175

Asp Phe Leu Pro Pro Val Gly Val Glu Asn Arg Glu Pro Ala Asp Ala
 180 185 190

Thr Ile Arg Glu Lys Arg Ala Lys Ile Lys Glu Met Met Thr His Ala
 195 200 205

Trp Asn Asn Tyr Lys Arg Tyr Ala Trp Gly Leu Asn Glu Leu Lys Pro
 210 215 220

Ile Ser Lys Glu Gly His Ser Ser Ser Leu Phe Gly Asn Ile Lys Gly
 225 230 235 240

Ala Thr Ile Val Asp Ala Leu Asp Thr Leu Phe Ile Met Gly Met Lys
 245 250 255

Thr Glu Phe Gln Glu Ala Lys Ser Trp Ile Lys Lys Tyr Leu Asp Phe
 260 265 270

Asn Val Asn Ala Glu Val Ser Val Phe Glu Val Asn Ile Arg Phe Val
 275 280 285

Gly Gly Leu Leu Ser Ala Tyr Tyr Leu Ser Gly Glu Glu Ile Phe Arg
 290 295 300

Lys Lys Ala Val Glu Leu Gly Val Lys Leu Leu Pro Ala Phe His Thr
 305 310 315 320

Pro Ser Gly Ile Pro Trp Ala Leu Leu Asn Met Lys Ser Gly Ile Gly
 325 330 335

Arg Asn Trp Pro Trp Ala Ser Gly Gly Ser Ser Ile Leu Ala Glu Phe
 340 345 350

Gly Thr Leu His Leu Glu Phe Met His Leu Ser His Leu Ser Gly Asp
 355 360 365

Pro Val Phe Ala Glu Lys Val Met Lys Ile Arg Thr Val Leu Asn Lys
 370 375 380

Leu Asp Lys Pro Glu Gly Leu Tyr Pro Asn Tyr Leu Asn Pro Ser Ser
 385 390 395 400

Gly Gln Trp Gly Gln His His Val Ser Val Gly Gly Leu Gly Asp Ser
 405 410 415

Phe Tyr Glu Tyr Leu Leu Lys Ala Trp Leu Met Ser Asp Lys Thr Asp
 420 425 430

Leu Glu Ala Lys Lys Met Tyr Phe Asp Ala Val Gln Ala Ile Glu Thr
 435 440 445

His Leu Ile Arg Lys Ser Ser Gly Gly Leu Thr Tyr Ile Ala Glu Trp
 450 455 460

Lys Gly Gly Leu Leu Glu His Lys Met Gly His Leu Thr Cys Phe Ala
 465 470 475 480

Gly Gly Met Phe Ala Leu Gly Ala Asp Gly Ala Pro Glu Ala Arg Ala
 485 490 495

Gln His Tyr Leu Glu Leu Gly Ala Glu Ile Ala Arg Thr Cys His Glu
 500 505 510

Ser Tyr Asn Arg Thr Tyr Val Lys Leu Gly Pro Glu Ala Phe Arg Phe
 515 520 525

Asp Gly Gly Val Glu Ala Ile Ala Thr Arg Gln Asn Glu Lys Tyr Tyr
 530 535 540

Ile Leu Arg Pro Glu Val Ile Glu Thr Tyr Met Tyr Met Trp Arg Leu
 545 550 555 560

Thr His Asp Pro Lys Tyr Arg Thr Trp Ala Trp Glu Ala Val Glu Ala
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 580 585 590

Val Tyr Ile Ala Arg Glu Ser Tyr Asp Asp Val Gln Gln Ser Phe Phe
 595 600 605

Leu Ala Glu Thr Leu Lys Tyr Leu Tyr Leu Ile Phe Ser Asp Asp Asp
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<211> 51
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caa 63

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c 61

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c 61

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<210> 73
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<212> DNA
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 <220>
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29

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 <220>
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 <212> DNA
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 <223> wherein "n" is equal to "a" or "t" or "g" or "c".

<220>
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<210> 94
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<210> 98
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<213> Artificial

<220>

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<220>

<223> cloning primer

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37

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<211> 37

<212> DNA

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<220>

<223> cloning primer

<400> 101

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37